7:Nicolaisen E-5 (1951-1962) 1963 MS25 Tuareg MS25

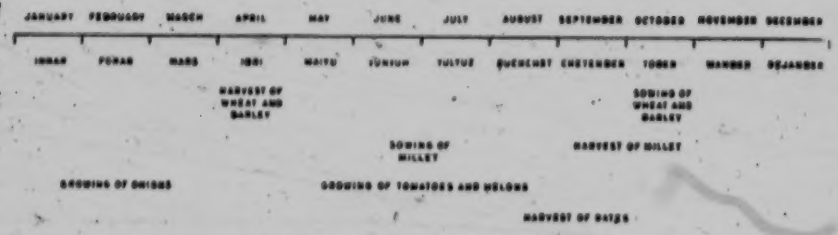
JANUARY FEBRUARY MARCH APRIL MAY JUNE JULY AUGUST SEPTEMBER OCTOBER NOVEMBER DECEMBER
IMAN FORAR MARS IGRI MAITU IUNIUM TULTUZ OUKEMET CHETEMBER TOBER MANBER DJANBER
HARVEST OF WHEAT AND BARLEY
SOWING OF WHEAT AND BARLEY
SOWING OF MILLET
HARVEST OF MILLET
SOWING OF ONIONS
SOWING OF TOMATOES AND MELONS
HARVEST OF DATES

Fig. 139. Horticultural calendar from Ahaggar.
The Tuareg and the negroid agriculturists have a lunar calendar of twelve months corresponding to the Arab calendar, but a lunar calendar has no practical value for the indication of seasonal agricultural activities. The Julian Calendar is known to some people of Ahaggar as well as to other Berbers of the Sahara and the Atlas. Tuareg names of Julian months are given above. Very few people in Ahaggar know the exact beginning and the end of the twelve Julian months, but a few names are used as seasonal terms: *imar* "midwinter", *mars* = "beginning of spring", *ibri* "early harvest" (of wheat and barley), *maiyu* "beginning of summer", *tober* = "late harvest" (millet).

which no definite figures can be given, while the yield of fruit trees growing in the garden plot does not necessarily belong to the agriculturist. These trees frequently belong to pastoral Tuareg.

I think it can be estimated that an agricultural household with its own garden produce about a thousand kilos of vegetables food products annually for its private use. We can add that though the members of an agricultural household live mainly on vegetable food products they also acquire a certain amount of food from livestock, which normally comprises a few goats and sheep, and perhaps one or two zebus. Conditions of stock-breeding are not always favourable to people who live continuously on the same spot, but it is advantageous to the agriculturists of Ahaggar, who live close to valleys with some pasture, that they are able to feed their animals on green garden products when pasture is badly developed and thus avoid the disaster of a drought. It is also an advantage to most agriculturists that they do not have to water their animals which can drink freely from the irrigation canals. The agriculturists can kill a few goats or sheep annually, they obtain milk and a little butter to be used mainly as a sauce for bread and porridge, and they make cheese of the *awles* type (cf. p. 224), but they never make cheese from fresh milk as do many pastoral Tuareg when milk is abundant. The agriculturists also breed fowls and pigeons, and some of them have an important meat supply from hunting with steel-traps (hares, jackals, fennecs, and ravens). Collecting, on the other hand, is of little or no value to irrigation farmers of Ahaggar.

The economic position of agriculturists who work without any particular obligations towards pastoral Tuareg is tolerably good. It is less favourable to those who grow winter crops also on behalf of the Tuareg, as do most cultivators. Some of them irrigate the garden plot with water raised from wells by oxen which may belong to the cultivator or to the Tuareg. But most agriculturists who work for the pastoral Tuareg irrigate by means of *foggara*. It is very strenuous work to dig a *foggara* canal, and co-operation is needed not only for this but also for the maintenance of the whole irrigation system. The gardens are individually tended by the agriculturists, who co-operate in the *foggara* work under the leadership of a headman known as *amɣar n efeli*, that is "chief of the *foggara*". This headman is

7:Nicolaisen E-5 (1951-1962) 1963 M525 Tuareg M525

appointed by the Tuareg garden owners and is rewarded by a garden of his own for his responsibility in supervising all co-operative work. The unit of agriculturists co-operating at the same *foggara* may or may not correspond to an extended family. The agriculturists co-operating on any large *foggara* irrigating ten or twelve gardens frequently represent two or three distinct families which are not linked to each other by kinship bonds. The cultivators of a *foggara* comprising nine gardens at Taṛhawhawt belong to three distinct, unrelated families. This is quite natural in view of the fact that contracts between the Tuareg and the cultivators are made individually.

There may also be no kinship bonds between the pastoral Tuareg who have gardens at the same foggara, and there are even Tuareg who own two or three gardens situated in widely separated river valleys of Ahaggar. But Tuareg garden owners of the same foggara frequently belong to the same tribe or even to the same tribal section. When a garden-owning Tuareg dies, his garden will generally pass to somebody within his family, but there seems to be no fixed rules governing the transference of gardens.

The individual contract between a Tuareg garden owner and his cultivator is made for a period of six months – the period of growth for wheat and barley. The agriculturist is responsible for all garden work, and the Tuareg garden owner has the following obligations:—

(1) To supply his cultivator with a hoe every year, or every two years in case a very good hoe is given.

(2) To pay for repairs of the *foggara* system, or for the digging of a new *foggara*. This payment is known as *almarsor* and consists of two kilos of cereals or dates every working day until water reaches the garden.

(3) To pay for the making of garden beds. This payment is known as *éhéré n egalob*, and is made only once as long as the garden remains on the same spot. When a garden is moved after a period of three or four years the payment must be made again. It varies with the size of the garden and the quality of its soil; in general it consists of 15–25 kilos of cereals.

Fig. 140. Millet (*tadlé*) of very high growth. It is said that this particular millet type was introduced to Ahaggar from the south – possibly from Ayr. Ahaggar, *Ahl Azzi* Arabs.

7:Nicolaisen E-5 (1951-1962) 1963 MS25 Tuareg MS25

241

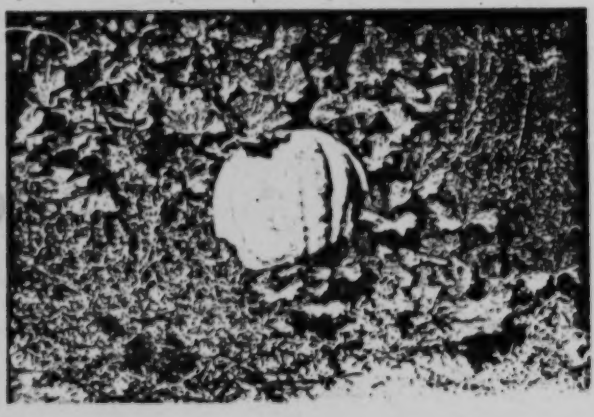

Fig. 141. The large gourd known as *kabuya* (*Cucurbita maxima*) growing close to the thorny fence (*afaraj*) which term is also generally used to designate a garden. Ahaggar, *Abl Azzi* Arabs.

Tuareg garden owners have other obligations besides those listed under these three items, but these obligations vary with the systems of contract of which there are three. One system is known as *khamast* according to which the agriculturists gets only one fifth of the crops. This system is widely found in North Africa but has disappeared in Ahaggar some years ago. It is said that it was abolished by the *Amenukal* because it very frequently gave rise to disputes between Tuareg garden owners and their cultivators. It is now replaced by two other systems, the *tilt* system allowing one third of the crops to the cultivator, and the *aril* system according to which crops are divided equally between the owner and the cultivator. This last system is that almost exclusively used in Ahaggar nowadays.

To revert to Tuareg obligations towards their cultivators, these obligations, in addition to those mentioned above, are as follows:—

(4) To hand over an amount of seed-corn (*tefest*) of wheat and barley according to the size of the garden plot and the system of contract. With a *khamast* agreement the Tuareg garden owner gives all seed-corn. With a *tilt* agreement half of the seed-corn is supplied by the owner, the other half by the cultivator who is then also allowed to cultivate a private garden. With an *aril* agreement half of the seed-corn is given by the garden owner, the other half by the cultivator who does not possess a private garden unless he is headman of a *foggara* (p. 196).

(5) To give an amount of food to the agriculturist during the cultivation period of six months. This payment is known as *tenafok*, and is fixed at 75 kilos of millet, barley, or dates when cultivation is done according to the *aril* system, while 150 kilos are given for cultivation according to agreements of the two systems *tilt* and *khamast*.

The net profit to an agriculturist who cultivates for a Tuareg garden owner is lower than that gained by an agriculturist cultivating exclusively for his own private use. This will be seen more clearly from the calculations below where a garden with an annual yield of 700 kilos wheat and barley is considered:—

7:Nicolaisen E-5 (1951-1962) 1963 MS25 Tuareg MS25

	Cultivator		*Tuareg Garden Owner*	
The khamast system	Receipts	Expenditure	Receipts	Expenditure
The *khamast* division	140 kg		560 kg	
Land rent		5 kg		5 kg
Yield of one garden bed to blacksmith		5 kg		5 kg
Seed-corn				50 kg
Food given to the cultivator	150 kg			150 kg
	290 kg	10 kg	560 kg	210 kg
Net profit	280 kg		350 kg	
The tilt system				
The tilt division	233 kg		466 kg	
Land rent		5 kg		5 kg
Yield of one garden bed to blacksmith		5 kg		5 kg
Seed-corn		25 kg		25 kg
Food given to the cultivator	150 kg			150 kg
	383 kg	35 kg	466 kg	185 kg
Net profit	348 kg		281 kg	
The aril system				
The *aril* division	350 kg		350 kg	
Land rent		5 kg		5 kg
Yield of one garden bed to blacksmith		5 kg		5 kg
Seed-corn		25 kg		25 kg
Food given to the cultivator	75 kg			75 kg
	425 kg	35 kg	350 kg	110 kg
Net profit	390 kg		240 kg	

A few notes should be added to these calculations of receipts and expenditure in the three systems. Thus the profit of the cultivator in all three systems is somewhat bigger than is indicated. The hoe is given by the Tuareg garden owner, who must also make certain payments for irrigation work and for the making of new garden beds as mentioned above. The garden owner's net profit in kilogrammes is consequently somewhat lower than indicated, but it should be mentioned that payments made by a Tuareg garden owner are hardly ever made in wheat and barley, but mainly in millet and dates which are less valuable, particularly so because the pastoral Tuareg acquire millet and dates at very low prices during their caravan expeditions (cf. p. 209 ff.). Therefore, the profit made by a Tuareg garden owner cannot so easily be given in kilogrammes of agricultural food products. It is evident that all three systems are profitable to the Tuareg, and it is clear that an agriculturist who cultivates a garden entirely on his own behalf is better off than an agriculturist who works for the Tuareg. It is also evident that to the agriculturist the *khamast* system is less profitable than the *tilt* system, which again is less profitable than the *aril* system. With the abolishment of the *khamast* system the agriculturists now

7:Nicolaisen E-5 (1951-1962) 1963 · MS25 Tuareg MS25

obtain a larger amount of vegetable food products and more wheat and barley. The pastoral Tuareg gain less from their gardens than they did when the *khamast* system prevailed, but it is still profitable for them to be garden owners.

The quantity of agricultural products anually consumed per person among the *Kel Ahaggar* is estimated by Lhote at 187 kilos millet, 15 kilos dates, and a small amount of wheat for which no figure is given. For Arabs of the Sahara the quantity of vegetable food is estimated at 180 kilos wheat, and 75 kilos dates anually per person (Lhote 1955a, p. 263). I add to this that wheat is used for bread to a very large extent by the Ahaggar Tuareg, who also make much use of barley for bread and porridge. According to Malaurie the amount of agricultural food products available per person among the Ahaggar Tuareg is about 400 grammes a day, or 146 kilos anually (Malaurie 1953, p. 342). It should be noted again that the amount of agricultural food products necessary for a Tuareg household varies greatly from one year to the other. In years of drought when agricultural products form so to speak the only source of food for the nomads, they estimate that a household consisting of husband, wife, and one child will consume about two kilos of cereals (dates) every day, or 730 kilos in a year. Consequently the amount of cereals and dates consumed anually per person may in dry years rise to about 245 kilos. This seems to correspond to the amount of food considered necessary for Arabs of Tidikelt and Tawat, who live almost exclusively on cereals and dates. When employed as labourers by the French Administration these sedentary Arabs are given 16 kilos of wheat and 4 kilos of rice a month, or 240 kilos of agricultural products anually per person (Information obtained from the administration office of In Salah in 1954). The agricultural products obtained by a pastoral household from a single garden will not meet the needs of the household and its slaves even in years of good grazing, and less so in dry years when pastoralists subsist entirely on agricultural food products. I give an example: During the year 1954 55 which was extremely dry, a Tuareg who owned three gardens cultivated with an *aril* agreement could not feed his household and his slaves (comprising two men, two women, and three children from five to twelve years old) by means of his own garden products. The Ahaggar Tuareg depend on caravan trading for their provisions of agricultural food, and trading also helps them to create the capital of millet and dates which is invested in their gardens in Ahaggar grown on their behalf by agriculturists. I believe that most pastoral households of Ahaggar have gardens, but there are Tuareg who have none. This is true, for instance, of most Tuareg living in and around the Ahnet Massif. Tuareg of this region formerly had gardens irrigated by the *foggara* system at Abalessa, but to-day they acquire their vegetable food products mainly by caravan trading.

IRRIGATION AGRICULTURE IN AYR

The largest aggregation of sedentary people in Ayr is found in Agadez (4.737), which is inhabited almost exclusively by negroid peoples who speak Hausa though most of them also know the Tuareg language (*tamachek*). This large sedentary population mainly lives on trade and on crafts of various kinds. The inhabitants are known to the Tuareg as the *Imeggedezen*. They are said to be related to the Sultan (or the *Amenukal*) of Agadez. There is a tradition which claims that the Sultan came

7:Nicolaisen E-5 (1951-1962) 1963 MS25 Tuareg MS25

tion that subsisted on agriculture. Most members of the *Kel Ewey* group are fairly negroid in appearance, and though some of them lead a nomadic life and subsist mainly on stock-breeding, the bulk of the *Kel Ewey* are sedentary agriculturists who have some livestock comprising goats, sheep, zebus, and sometimes camels also. Among the fair-skinned Tuareg of the *Kel Ferwan* drum-group there are very few sedentary agriculturists, though a few vassals have taken up irrigation agriculture in recent times. There are also agriculturists within the negroid group of the *Kel Ferwan* known as *Irawélen*. Some *Kel Ferwan* Tuareg have gardens cultivated by their slaves, but this is not customary nowadays when slavery is of little importance in Ayr. Contracts between pastoral Tuareg and cultivators are said to have been unknown until recent times when a few pastoralists have made contracts with cultivators. There seem to be no fixed systems regulating such relationships, but it is said to be common for the cultivator and the Tuareg to divide crops equally between them.

Though agriculture could be practised in Ayr without artificial irrigation there are no rain-grown crops within the Massif nowadays. The *foggara* system is unknown, and irrigation is done by raising water from shallow wells. The system of a pole and bucket provided with a counterweight known in Ayr as *aseftan* has disappeared quite recently. It was used at many agricultural settlements of Ayr until a few years ago, and in parts of the country formed the only type of irrigation system at the time of the French occupation. One informant told me that in his boyhood about 35 years ago no other irrigation method was employed at Alarses, and this is in agreement with literature (cf. Capot-Rey 1953a, p. 322). At that time, however, the method of raising water from wells by animal traction (in Ayr *anu*, in Ahaggar *tanut*) was also practised at many settlements. It is unknown when it came to Ayr, but it is said to have been introduced from the north – probably from the regions of Fezzan and Tassilé-n-Ajjer from where the same system came to Ahaggar (cf. p. 187). It is now used at all settlements as the only type of irrigation system, and zebu-oxen are always used for traction. This was not so in the past when zebus were less common than to-day, and it is said that donkeys were then the common draught-animals. The irrigation of gardens is performed in much the same way as in Ahaggar. The water raised from the shallow well (*anu*) is led through a narrow canal (*arelal*) to a large basin (*tisemt*) from where another canal (*duki*) leads to the garden (*afarag*), which is divided into a number of beds (*éfemral*).

Cereals form the most important crops in Ayr. The common winter crop is wheat (*elkama*; *Triticum vulgare*), but also barley (*Hordeum tetrastichum* var. *pallidum*) is very widely grown. One crop of these two cereals is taken every winter, and it is said that the period of growth is about five months; sowing is done in October, harvest in March. Cereals are also important for summer crops. Both millet (*énélé*; *Pennisetum typhoideum*) and sorghum (*abora*; *Sorghum caudatum*) are grown, and millet, as we have seen, has a very short period of growth – only about two months (cf. p. 184). But though millet is most important as food for agriculturists and pastoral Tuareg alike, it is not widely grown because it is difficult to protect it from the numerous small birds and because, it is said, millet grown in Ayr is of a quality inferior to that of the Sudanese type. Most of the millet eaten in Ayr is therefore imported from Damergu by pastoral Tuareg. By far the most important summer crop grown in Ayr is maize (*Zea mays*), which is known to the Tuareg as *abora maser*, that is "Egyptian sorghum" (*abora* = sorghum; *maser* = Egypt) (the name *maser* is also used to designate the white cotton used for garments